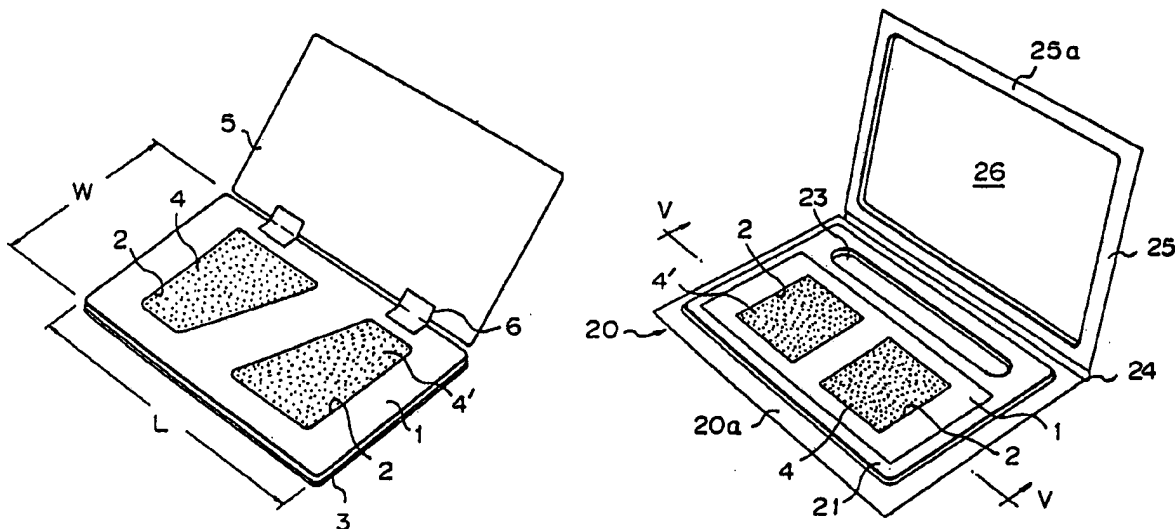




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁴ : A45D 40/00, 40/22	A1	(11) International Publication Number: WO 88/ 07825 (43) International Publication Date: 20 October 1988 (20.10.88)
(21) International Application Number: PCT/JP88/00375 (22) International Filing Date: 15 April 1988 (15.04.88) (31) Priority Application Numbers: 62/57329 U 62/69629 U 62/167895 62/106097 U (32) Priority Dates: 15 April 1987 (15.04.87) 12 May 1987 (12.05.87) 7 July 1987 (07.07.87) 10 July 1987 (10.07.87) (33) Priority Country: JP (71) Applicant (for all designated States except US): BIGWAY KABUSHIKI KAISHA [JP/JP]; 8-1, Ohji 1-chome, Kita-ku, Tokyo 114 (JP). (72) Inventors; and (75) Inventors/Applicants (for US only) : SAGAWA, Kiyoshi [JP/JP]; Bigway Kabushiki Kaisha, 8-1, Ohji 1-chome, Kita-ku, Tokyo 114 (JP). SAITO, Shigeru [JP/JP]; Ohji Plant of Bigway Kabushiki Kaisha,		27-7, Ohji 1-chome, Kita-ku, Tokyo 114 (JP). SUGIMOTO, Kunio [JP/JP]; Ohji Plant of Bigway Kabushiki Kaisha, 27-7, Ohji 1-chome, Kita-ku, Tokyo 115 (JP). HOSHI, Rie [JP/JP]; Ohji Plant of Bigway Kabushiki Kaisha, 27-7, Ohji 1-chome, Kita-ku, Tokyo 114 (JP). (74) Agents: TAKEUCHI, Sumio et al.; Daiwa Bank Toranomon Building, 6-21, Nishi-Shimbashi 1-chome, Minato-ku, Tokyo 105 (JP). (81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), FR (European patent), GB (European patent), IT (European patent), LU (European patent), NL (European patent), SE (European patent), US. Published <i>With international search report.</i>

(54) Title: CARD TYPE COSMETICS AND METHOD FOR MANUFACTURING THE SAME



(57) Abstract

A very thin cosmetic case, which may be called "cosmetic card" (1) of a thickness substantially similar to a membership card or credit card and having one or more openings (2) punched through its thickness and closed at its bottom by a thin film (3) or tape or metal foil to form one or more pockets for receiving a certain amount of cosmetics (4) stuffed therein. The cosmetic card (1) may be provided with a thin lid (5) attached to its one edge by means of a resilient hinge tape (6), or the cosmetic card may be contained in a thin case (20) having a thin lid (25) hingedly attached to its edge. The cosmetic case of this card type is really handy and readily portable in that it can be put into a small space, for example, a coat pocket or inserted between pages of the book.

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DESCRIPTION

CARD TYPE COSMETICS AND
METHOD FOR MANUFACTURING THE SAMETechnical Field

The present invention relates to a very thin cosmetic case which may be called a "card type cosmetic" or "cosmetic card", and more particularly to a card which is very thin and light and contains in its thickness a certain amount of cosmetics, and a method for manufacturing such a cosmetic card.

Background Art

Various cosmetics such as rouges, eyeshadow, eyebrow powder, eyeliner, eyecream, foundations, etc. are generally contained in the cases which are usually called the "compacts." The compact basically comprises an inner vessel containing powdery or creamy cosmetics, and an outer shell having a main body accomodating the inner vessel and toilet utensils such as a small brush and the like and a cover or lid hingedly attached to the main body. Such "compacts" usually have to be put into handbags or other relatively large bags carried by a user when she is going out, and are not suitable to be put into pockets of the clothes or placed, for example, between pages of a book. In this sense, the cosmetic "compacts" of the prior art are not necessarily handy or portable in the real meaning of the word.

On the other hand, various cards have been developed and employed recently including membership cards, credit cards, or telephone cards, and so on. A single card can take the place of a large number of bills or notes and eliminate the use of the large wallet to thereby diminish the volume of personal effects. The concept of use of a thin and light card might also be applicable to the cosmetic cases, but before the present invention specific realization of this concept has not been attained with respect to the cosmetic cases.

Furthermore, as to the conventional cosmetics contained in the so called "compacts", a process for fabricating the case

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for containing cosmetics, on one hand, and a process for charging the case with cosmetics, on the other hand, are usually carried out separately from each other and at different places, i.e. different factories. The process for fabricating the cosmetic cases, i.e. "compacts", includes relatively complicated and expensive steps and the resultant cases are inevitably of high cost. In addition, due to the fact that these cases must be transported from a factory where they are manufactured to another factory where cosmetics are charged in the cases, transporting expenses are added to the high cost of the cases causing the final prices of cosmetics to be more and more high.

It would be highly desirable if such a process that fabricating the cases and subsequent charging the same with cosmetics can be carried out continuously at the same place, i.e. in the same factory, could be developed without excessive investments, but such an ideal process has not been reached until now.

Disclosure of Invention

Accordingly, it is an object of the present invention to provide a new and novel card type cosmetic case which is as thin and light as a membership card, credit card or telephone card and contains a sufficient amount of cosmetics and utensils for applying the cosmetics to the face.

Another object of the invention is to provide a method for manufacturing a new and novel card type cosmetics.

Yet another object of the invention is to provide a method for preparing card type cosmetics which can be carried out as a continuous operation including fabricating of thin card-like vessel and filling of cosmetics into such vessels.

Brief Description of Drawings

Figure 1 represents a first embodiment of a card type cosmetic of the invention in a perspective view;

Figure 2 is a cross sectional view of a card after punched and provided with a bottom film;

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Figure 3 shows a variation of the embodiment shown in Fig. 1 in a partial perspective view;

Figure 4 represents a second embodiment of the invention in a perspective view;

Figure 5 is an exploded sectional view taken substantially along the line V-V in Figure 4;

Figure 6 shows a third embodiment of a card type cosmetic case according to the invention in a longitudinal sectional view;

Figure 7 and Figure 8 show a modified form of the third embodiment of a card type cosmetic of the invention, in which

Figure 7 is a perspective view of a punched card and a bottom member therefor, and Figure 8 is a perspective view showing a bottom sheet case and a lid for accommodating a punched card shown in phantom lines;

Figures 9 through 13 illustrate several steps of a method of manufacturing a card type cosmetic of the invention, in which

Figure 9 shows a cutting step of a blank card from continuous sheet material,

Figure 10 shows a punching step on the blank card,

Figure 11 shows a modified form of the punched card,

Figure 12 illustrates a step for applying adhesives and bottom member (tape or film) onto the punched card, and

Figure 13 illustrates charging the punched card having bottom member bonded thereto with cosmetics.

Best Mode For Carrying Out the Invention

Referring now to the drawings, several embodiments of the invention will be specifically described.

Figures 1 and 2 show a first embodiment of a card type cosmetic which utilizes a very thin punched card 1 as a vessel for accommodating cosmetics. The card 1 is formed with two openings 2 which, as shown in Figure 2, are closed at their bottoms by means of a thin bottom member 3 such as plastic tapes, films and metallic foil. Preferably, an adhesive tape may be used as bottom member 3 in this example. The card 1 may be of a thickness ranging from .5 mm to 3 mm, preferably from 1.0 mm to 1.5 mm.

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and most preferably 1.3 mm, and a size of from 5 to 6 cm width (W) and from 8 to 9 cm length (L), for example. The bottom member 3 may be of a thickness ranging from .01 mm to .1 mm. Thus, the card 1 even after combined with bottom member 3 has a size similar to, for example, a membership card or credit card, or so called telephone card, which is of relatively small size and very thin thickness in comparison with the prior art cosmetic case such as a "compact."

To fabricate the card 1, various sheet materials may be employed including sheet metals such as sheet aluminum, iron or steel; plastic sheets such as nylon, polyvinyl chloride and polyester sheets; and papers such as converted papers, paperboard or cardboard, etc. These sheet materials are cut into a desired size as mentioned above and punched to form a desired number of openings 2. These openings 2 are then closed at their bottoms by applying thereto bottom member 3, as clearly shown in Figure 2, to form pockets. The openings 2 can be of any shapes such as square, triangle, trapezoid, circular, ellipse, etc. One or more openings 2 can be formed in the card 1.

Pockets formed by openings 2 and bottom member 3 can be filled up with any desired cosmetics 4 and 4' as illustrated by different patterns in Figure 1, such, for example, as eyeshadow, eyebrow powder, rouge, foundations and other powdery or creamy cosmetic preparations.

Cosmetics 4, 4' are pressed down to the same level as the upper surface of the card 1, though they can be shaped at lower or higher level than the upper surface of the card 1 if desired. Preferably, resilient and compressible material should be chosen as bottom member 3 so that it can absorb the pressing pressures to form tightly compressed masses of cosmetics in the very thin pockets. These tightly compressed masses of cosmetics can be held in the pockets by adhesion to the tape 3 where the adhesive tape is used as bottom member 3.

The punched card 1 filled up with cosmetics 4 and 4' can be sold as such as a new type of card cosmetic. but preferably

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it is combined with a cover sheet or film 5 attached to one side of the card 1 by means of flexible hinge tapes 6 such as resilient plastic tape bonded to the upper surface of the card 1 and to the inner surface of the cover 5.

Thus, the finished card type cosmetics of the invention are of very thin thickness, small size and light weight, even with the cover sheet 5, so that they can easily be kept in the usual cardcase or wallet, or even in a pocket of the clothes, in the same fashion that credit cards or the like are held there in, and without unmanageably occupying large spaces therein.

A variation of the embodiment described above is shown in Figure 3. The thin punched card 1 has three openings 2 closed at their bottom by the bottom tape 3 to form three pockets. Each of these pockets is filled up with cosmetic 4 different from each other. The card 1 has an extension 1a which has no bottom member 3 and is formed with an elongated slot 7 to accommodate a chip or stick 8 having a small brush 9 at an end or ends. Small detents 7a may be formed on inner edges of the slot 7 and small concaves 8a may be correspondingly formed on the chip 8 to hold the same in the slot 7. If desired, larger extension 1a can be provided to form a plurality of slots 7 for accomodating several chips 8 corresponding to thenumber of cosmetics filled in the openings 2.

Figures 4 and 5 represent a second embodiment of the card type cosmetic of the invention. This embodiment uses the punched thin card 1 similar to that of the previous example. Openings 2 and 2' of the card 1 are closed by a bottom film 3 which, in this example, is preferably of heat resistant material such as aluminum foil or heat resistant plastic films so as to be able to receive hot molten cosmetic stock poured into the openings 2 and 2'. Molten cosmetic stock is solidified in the pockets 2 and 2' and leveled at its upper surface to form cosmetics 4 and 4' as shown in Figures 4 and 5.

In the second embodiment, the card 1 filled with cosmetics 4 and 4' are contained in a thin case 20 having an integral lid

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25. The thin case 20 has a protruded portion 21 defining a thin card-containing space 22 and a brush-containing slot 23 on its upper surface. The case 20 has an integral lid 25 connected at its one side by means of a resilient hinged portion 24. The lid 25 is formed on its inner surface with a concave portion 26 receiving the protruded portion 21 of the case 20. Mating edges 20a and 25a of the case and the lid respectively may be provided with any clip means to hold the case and the lid in closed condition.

The case 20 and the lid 25 can be fabricated from such material as plastic sheets or sheet metals as by pressing or molding procedures. The concaved portion 26 of the cover 25 may be finished as mirror by vapor deposition of metals such as aluminum.

Thus, the second embodiment shown in Figure 4 can have three elements, i.e. cosmetics, a brush and a mirror in the very thin mass like a credit card or telephone card.

Figure 6 represents a third embodiment of the invention. The punched card 1 may be made of plastic or metallic sheet of, for example, from .5 to 2.0mm thickness and a size similar to a membership card or credit card. The card 1 has a plurality of openings 2 and 2' formed on the substantially half region thereof, and a mirror portion 1b formed on the remaining region. The mirror portion 1b can be formed on the plastic card 1 as by vapor depositing or metal plating techniques, or bonding metallic foil to the surface of the card 1. Where the card 1 is made of sheet aluminum or stainless steel, the mirror portion can be made by a mirror finishing technique.

The punched card 1 formed with the mirror portion 1b is combined directly with a bottom sheet case 30. This bottom sheet case 30 may be made of the same material as the card 1 and is formed with upright edges 30a and 30b at its periphery (see Fig. 8). Preferably, the bottom sheet case 30 is made of sheet aluminum and bonded to the under surface of the card 1 contained therein. After charging the openings 2 and 2' with cosmetics 4 and

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4', a lid 15 is attached to the upper surface of the card 1 through a flexible tape 16 and a small bar 17 is applied to fix the lid 15 and tape 16. The lid 15 has a tongue 15a adapted to fit against one edge of the case 30.

As a non-limiting example, the card 1 can be made of .7 mm thick plastic sheet such as ABS resin, polyethylene terephthalate or polycarbonate processed by vapor deposition techniques to form mirror surface, the case and bottom sheet 30 is made of aluminum sheet of the same thickness, and the lid 15 is made of the same thickness sheet aluminum. Then, the total thickness of the card cosmetic of the invention amount only to 2.1 mm which means an extraordinarily thin cosmetic case or compact. Even within this thin compact, a sufficient amount of cosmetics as well as mirror can be contained for use during a trip for a week, for example.

Figures 7 and 8 show a modified form of the embodiment of Figure 6 in which a plastic or metallic sheet 13 is attached to the undersurface of the punched card 1 to close the openings 2, 2' and 2". The card 1 filled with cosmetics in each opening is removably fitted within the thin case 30 shown in Figure 8 and applied with the lid 15 in the same manner as in Figure 6 to complete a very thin and re-usable cosmetic compact. When cosmetics in the openings are used up, a fresh card 1 carrying new cosmetics may be replaced for the old one.

Referring now to Figures 9 through 13, an example of the method for manufacturing the card type cosmetics according to the invention will be described.

Firstly, as shown in Figure 9, a thin sheet material 10 having a thickness of from .5 to 3 mm and preferably about 1.3mm is cut by an appropriate cutting blade 11 into stock cards 10' having the width W of about 5.5 cm and the length L of about 8.5 cm. The sheet material 10 can be selected from sheet metals such as aluminum, iron, stainless steel; relatively stiff or hard plastic sheets; or converted papers and card boards. The stock or blank cards 10' have the substantially same size as the mem-

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bership cards, credit cards or telephone cards. Though the stock 10' is shown as having a rectangular shape in Figure 9, it may be cut into any other desired shapes such as, for example, hexagon, octagon and other polygons, or circular, oval, and so on by means of appropriate cutting or punching means.

Then, the blank card 10 is punched by an appropriate punching means 12 having protrusions 12p to form the punched card 1 having openings 2 and punched waste pieces 2w are removed as shown in Figure 10. Although openings 2 in the punched card 1 are illustrated as rectangular shapes in Figure 10, they may be of any other shapes such as trapezoid, ellipse, and circular shape. Further, opening 2 may be partitioned, as shown in Figure 11, to form a plurality of sub-openings 2a, 2b, 2c and 2d.

In Figures 9 and 10, cutting and punching operations are separately illustrated from each other, but a single tool having both cutting blade and punching tools can be used for simultaneously conducting both cutting and punching operations.

Next, the punched cards 1 are placed on a conveyor belt C running in the direction indicated by an arrow A in Figure 12. A roll 19a is disposed over the conveyor C for applying adhesives 18 onto the punched card 1 which is being moved by the conveyor C. Adhesives usable in the present invention include aqueous size solutions such as polyvinyl alcohol, carboxymethyl cellulose, methylcellulose, hydroxymethylcellulose, hydroxyethylcellulose and alginic acid; aqueous solutions of polysaccharides such as gum arabic and starch; and synthetic adhesives such as vinyl acetate emulsion and acrylic emulsion. Adhesives used in the invention should be innocuous to the human skin.

Then, as shown at the right part in Figure 12, a thin tape 3 or film 13 is applied onto the adhesive layer 18 on the punched card 1 and pressed down altogether by a pressure roll 19b to form a thin vessel composed of the punched card 1 and the thin tape or film 3, 13 firmly bonded thereto for accommodating cosmetics.

Thin tape or film 3, 13 may be of any material selected

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from paper, fabric, plastic or metallic foil such as aluminum foil. Tapes or films 3, 13 are preferably as thin as possible, so far as they are durable for closing the bottoms of the opening 2 of the punched card 1. Where hot molten cosmetics are to be poured into closed openings, the bottom tape or film should be of heat resistant material.

The punched card 1 having tape 3 or film 13 bonded on its one surface is then turned over and placed with its openings 2 facing upward on the conveyor C travelling in the direction B as shown in Figure 13. From a charging head H disposed over the travelling path of the conveyor C, cosmetic stock 14 in the powdery or creamy form is supplied into each opening 2. As the card 1 passes beneath a leveling roll 19c, cosmetic stock 14 in each opening 2 is leveled down to the substantially same height as the upper surface of the punched card 1 to produce the cosmetic card of the present invention.

Alternatively, adhesives may be applied to bottom members 3 or 13 prior to combining them with the punched card 1. After combining them with the card 1 and before adhesives are dried, cosmetics 4 can be charged in the opening 2 of the card 1 so that cosmetics 4 are bonded securely to the bottom tape 3 or bottom film 13. This alternative method of the invention is deemed particularly suitable for wet powdery cosmetics.

Industrial Applicability

Advantages attained by the present invention reside in that the cosmetic cases can be manufactured employing relatively inexpensive sheet materials through relatively simple and inexpensive procedures, and that the final products comprising thin card type cases and an amount of cosmetics contained in the card cases can be made through a continuous and consistent process carried out in the one and same plant without necessity of conveying the cosmetic cases manufactured in a plant to another plant for charging them with cosmetics. These facts enable prompt reaction of cosmetic manufacturers to a variety of orders which may be issued by different buyers or distributors, and

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permit hurried production of ordered cosmetic cards with relatively low costs and selling in popular prices.

Card type cosmetics of the present invention are very thin and light weight as compared to the "compact" type cosmetics of the prior art so that they can readily be carried in user's hand, or in coat pockets, or inserted between pages of the book.

The fact that the cosmetic cards of the invention are readily and handily portable and of popular or lower prices will induce enlargement of customer groupes or classes for the cosmetics toward the younger generation and larger consumption of the cosmetics than heretofore expected.

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C L A I M S

1. A cosmetic card comprising a thin card having at least an opening formed in its thickness, a thin bottom sheet applied to the bottom surface of said card for closing the bottom of said opening, and an amount of cosmetics stuffed in said opening.
2. A cosmetic card as claimed in Claim 1 wherein said card has two or more openings formed therein.
3. A cosmetic card as claimed in Claim 2 wherein said openings are shaped as polygons such as square, rectangular, trapezoid, triangle, and so on.
4. A cosmetic card as claimed in Claim 2 wherein said openings are in rounded shapes such as circular, ellipse, and so on.
5. A cosmetic card as claimed in any one of Claim 1 through 4 wherein said card has a flat thin lid attached hingedly to one edge thereof.
6. A cosmetic card as claimed in any one of Claim 1 through 5 wherein said card is made of sheet materials selected from the group consisting of plastics, metals and papers.
7. A cosmetic card as claimed in Claim 5 wherein said card and said lid are made of different materials from each other.
8. A cosmetic card as claimed in any one of Claim 1 through 5 wherein said card has at least a slot formed therein for accommodating toilet utensils such as small brush or chip.
9. A cosmetic card as claimed in any one of Claim 1 through 4, further comprising a thin case for accommodating said card-bottom sheet-cosmetics combination, said thin case having a lid attached hingedly to its one edge for covering the upper surface of said combination.

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10. A cosmetic card as claimed in Claim 9 wherein a mirror portion is formed on the inner surface of said lid.
11. A cosmetic card as claimed in Claim 9 wherein a mirror portion is formed on the upper surface of said card.
12. A cosmetic card as claimed in Claim 1, 5 or 9 wherein said card has a thickness ranging from .5 mm to 3 mm. and said bottom sheet has a thickness ranging from .01 mm to .1 mm.
13. A cosmetic card as claimed in Claim 12 wherein said card has a thickness of from 1.0 to 1.5 mm and said bottom sheet is of .1 mm.
14. A cosmetic card as claimed in Claim 13 wherein said card has a thickness of about 1.3 mm.
15. A process for manufacturing a card type cosmetic, comprising the steps of:
 - cutting continuous sheet material into a blank card,
 - punching said blank card to form one or more openings therein,
 - applying a bottom sheet to one surface of said punched card for closing the bottom of said openings,
 - stuffing cosmetics in said openings closed at bottoms,
 - and
 - leveling the upper surface of said cosmetics to approximately the same height as the upper surface of said punched card.
16. A process as claimed in Claim 15 wherein said cutting and punching operations are carried out simultaneously using a single tool.
17. A process as claimed in Claim 15 wherein adhesives are applied to the bottom surface of said punched cards prior to applying thereto said bottom sheet.

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18. A process as claimed in Claim 15 wherein adhesives are applied to one surface of said bottom sheet prior to applying it to said punched card.
19. A process as claimed in Claim 15 wherein an adhesive tape is employed as said bottom sheet.
20. A process as claimed in Claim 17 or 18 wherein a metallic foil is employed as said bottom sheet.

Fig. 1

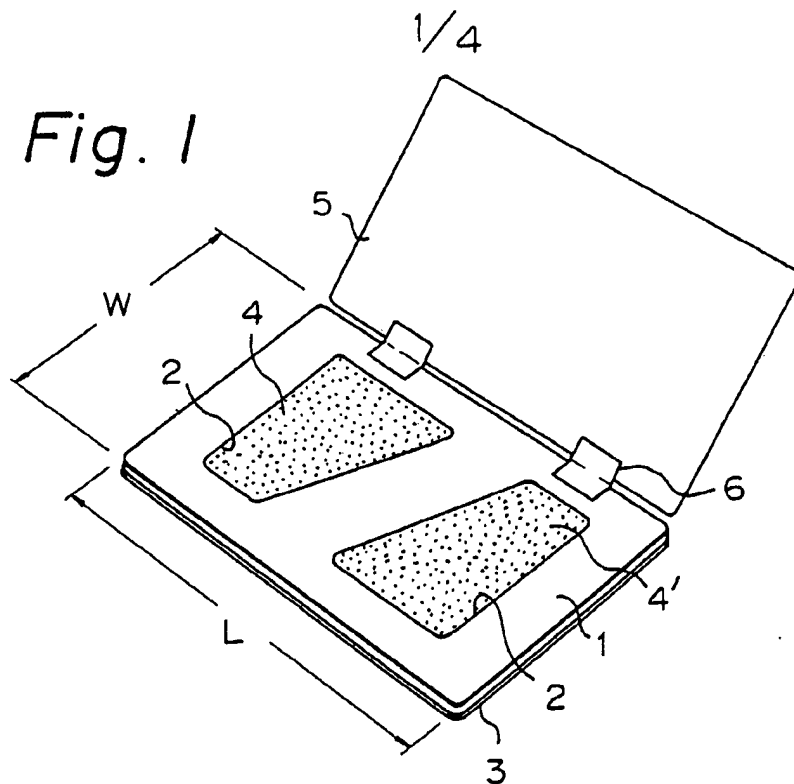


Fig. 2

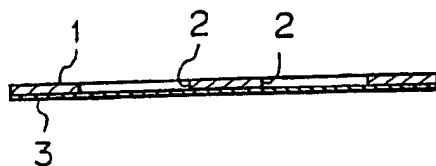
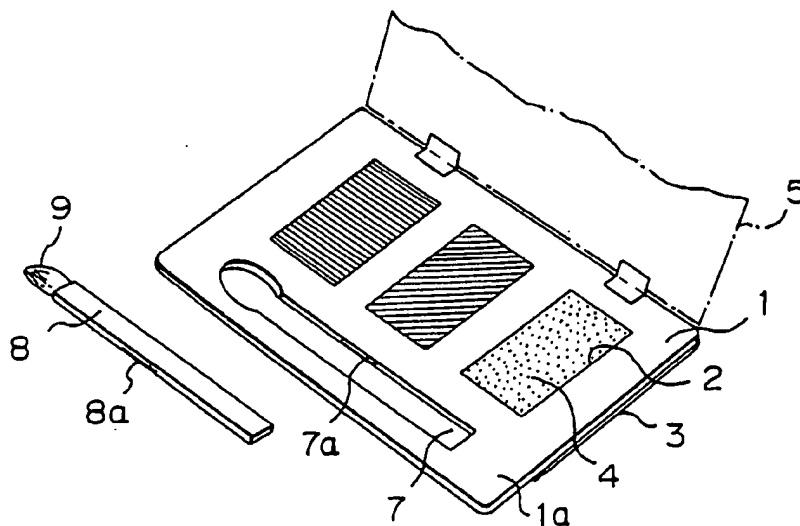


Fig. 3



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Fig. 4

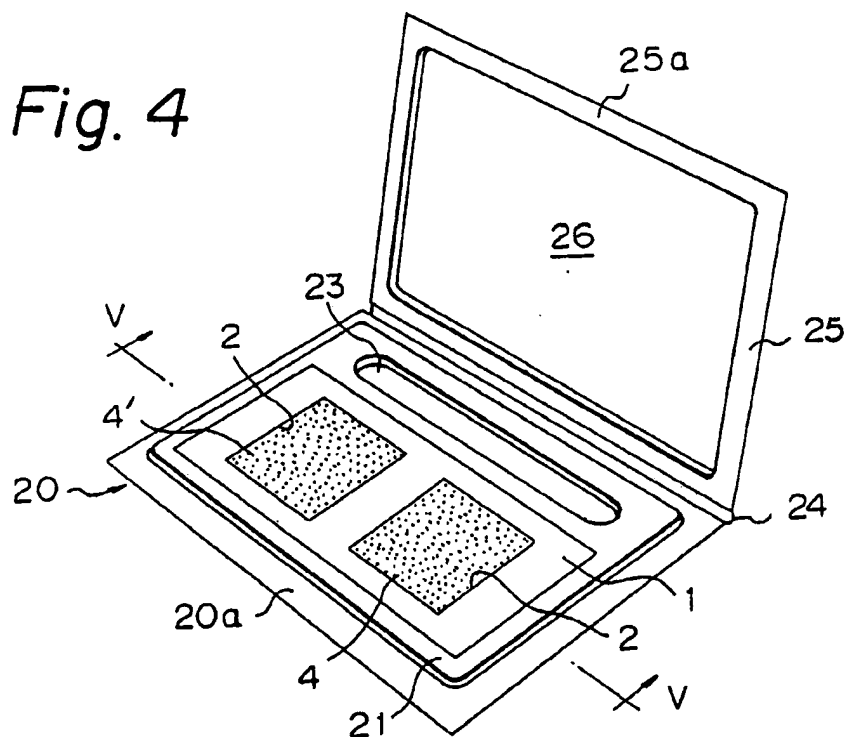


Fig. 5

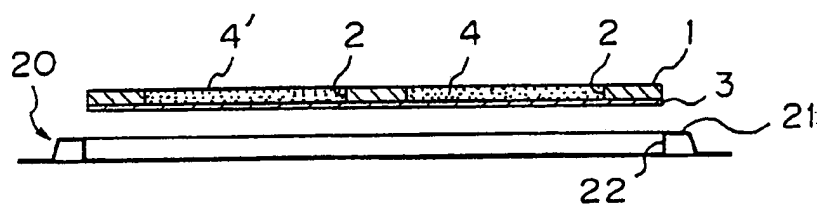
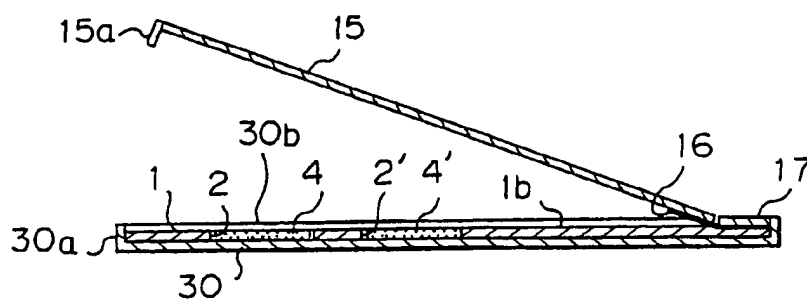


Fig. 6



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Fig. 7

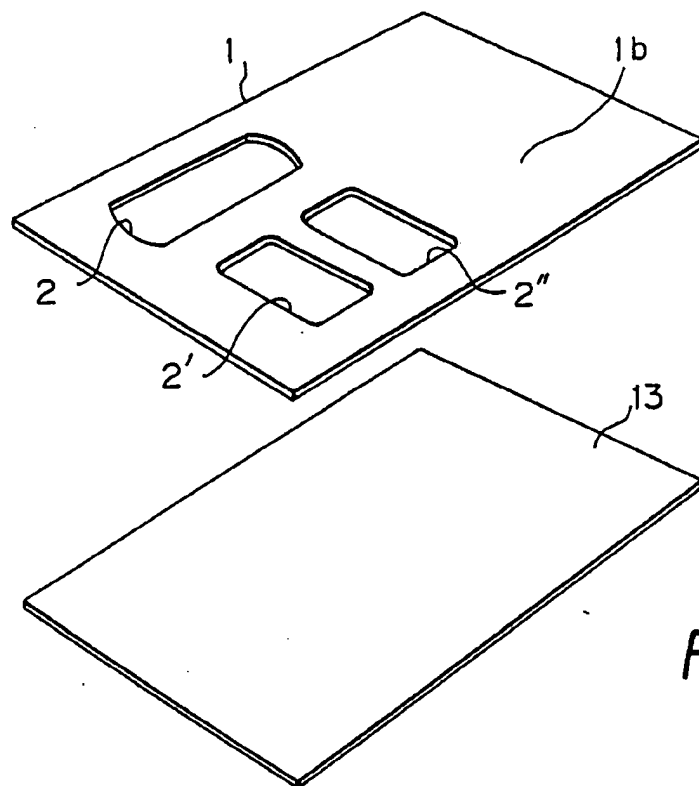
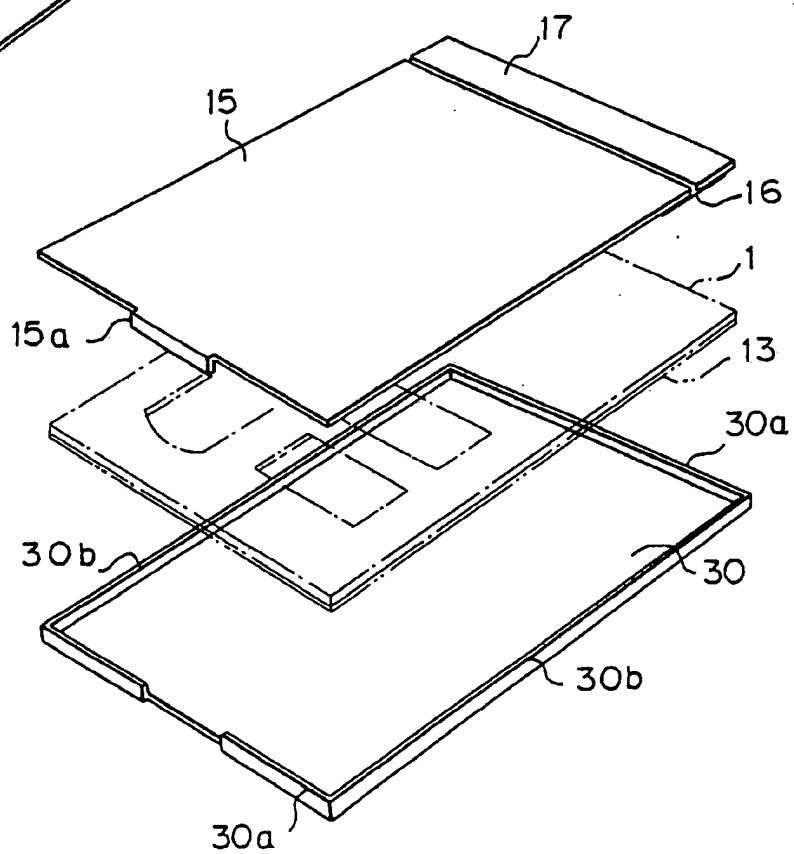


Fig. 8



4/4

Fig. 9

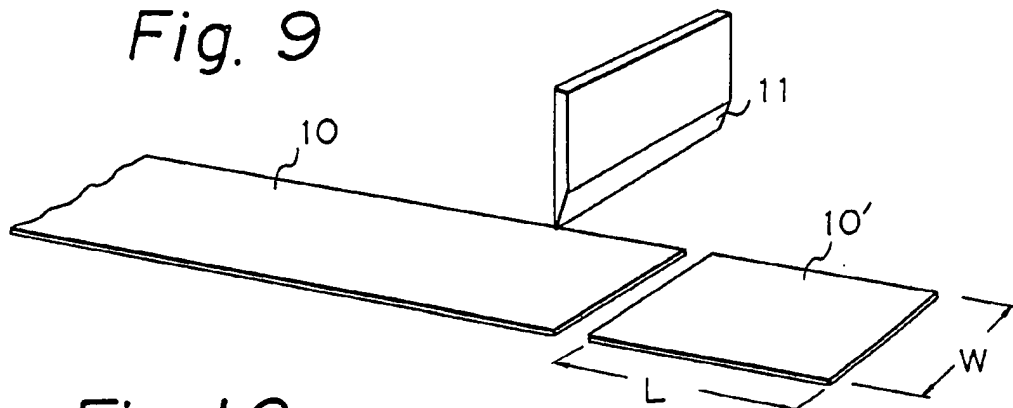


Fig. 10

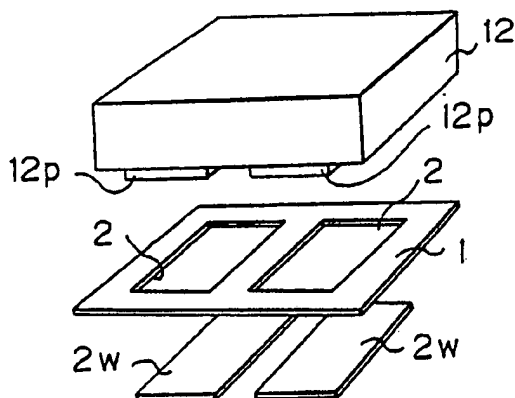


Fig. 11

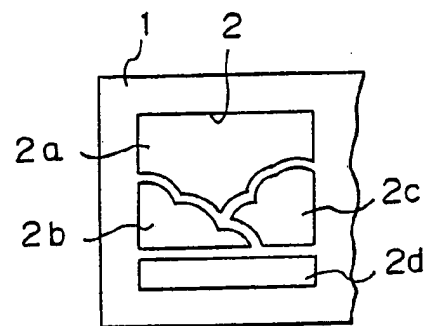


Fig. 12

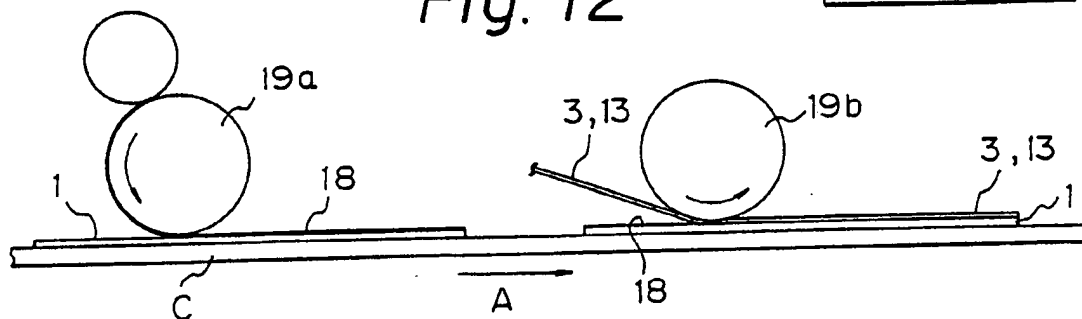
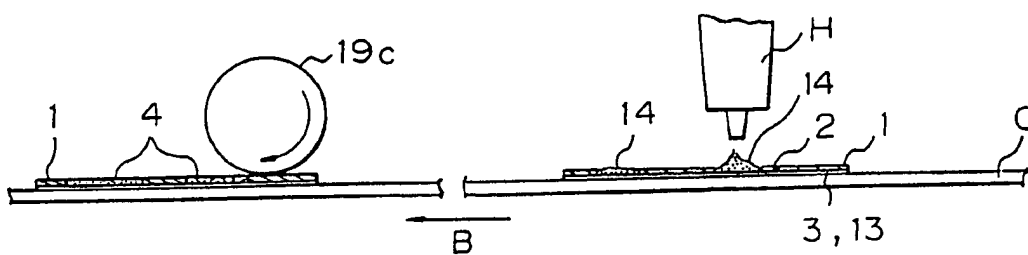


Fig. 13



INTERNATIONAL SEARCH REPORT

International Application No PCT/JP 88/00375

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁴ According to International Patent Classification (IPC) or to both National Classification and IPC IPC ⁴ : A 45 D 40/00; A 45 D 40/22																																			
II. FIELDS SEARCHED <div style="text-align: right; font-size: small;">Minimum Documentation Searched ⁷</div> <table style="width: 100%; border: none;"> <tr> <td style="width: 25%; border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 5px;"> Classification System IPC ⁴ </div> </td> <td style="border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 5px;"> Classification Symbols A 45 D; A 61 K; G 09 F </div> </td> </tr> </table> <div style="text-align: center; font-size: x-small; margin-top: 5px;"> Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸ </div>			<div style="border: 1px solid black; padding: 5px;"> Classification System IPC ⁴ </div>	<div style="border: 1px solid black; padding: 5px;"> Classification Symbols A 45 D; A 61 K; G 09 F </div>																															
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III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹ <table style="width: 100%; border: none;"> <tr> <th style="width: 10%; border: none; font-size: x-small;">Category ⁹</th> <th style="width: 70%; border: none; font-size: x-small;">Citation of Document, ¹¹ with Indication, where appropriate, of the relevant passages ¹²</th> <th style="width: 20%; border: none; font-size: x-small;">Relevant to Claim No. ¹³</th> </tr> <tr> <td style="border: none; text-align: center; vertical-align: top;">X</td> <td style="border: none; vertical-align: top;">US, A, 2561400 (MORRELL) 24 July 1951, see column 1, line 50 - column 2, line 40; figures 1,2</td> <td style="border: none; text-align: center; vertical-align: top;">1</td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: top;">A</td> <td style="border: none; text-align: center; vertical-align: top;">--</td> <td style="border: none; text-align: center; vertical-align: top;">2-7</td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: top;">X</td> <td style="border: none; vertical-align: top;">US, A, 2775248 (MORRELL) 25 December 1956, see column 1, line 72 - column 3, line 2; figures 1-3</td> <td style="border: none; text-align: center; vertical-align: top;">1</td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: top;">A</td> <td style="border: none; text-align: center; vertical-align: top;">--</td> <td style="border: none; text-align: center; vertical-align: top;">2-8</td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: top;">A</td> <td style="border: none; vertical-align: top;">FR, A, 398422 (MAILLARD) 4 June 1909</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: top;">A</td> <td style="border: none; vertical-align: top;">EP, A, 0197206 (INTERCOS ITALIANA) 15 October 1986</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: top;">A</td> <td style="border: none; vertical-align: top;">EP, A, 0197184 (WEBCRAFT) 15 October 1986</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: top;">A</td> <td style="border: none; vertical-align: top;">US, A, 2336024 (MAKELA) 7 December 1943</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none; text-align: center; vertical-align: top;">A</td> <td style="border: none; vertical-align: top;">FR, A, 2076190 (C.E.A.) 15 October 1971</td> <td style="border: none;"></td> </tr> <tr> <td colspan="3" style="border: none; text-align: center; padding-top: 10px;">-----</td> </tr> </table>			Category ⁹	Citation of Document, ¹¹ with Indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³	X	US, A, 2561400 (MORRELL) 24 July 1951, see column 1, line 50 - column 2, line 40; figures 1,2	1	A	--	2-7	X	US, A, 2775248 (MORRELL) 25 December 1956, see column 1, line 72 - column 3, line 2; figures 1-3	1	A	--	2-8	A	FR, A, 398422 (MAILLARD) 4 June 1909		A	EP, A, 0197206 (INTERCOS ITALIANA) 15 October 1986		A	EP, A, 0197184 (WEBCRAFT) 15 October 1986		A	US, A, 2336024 (MAKELA) 7 December 1943		A	FR, A, 2076190 (C.E.A.) 15 October 1971		-----		
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<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>¹⁰ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p> </div> </div>																																			
IV. CERTIFICATION <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 5px;"> Date of the Actual Completion of the International Search 13th July 1988 </div> </td> <td style="width: 50%; border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 5px;"> Date of Mailing of this International Search Report 02.08.88 </div> </td> </tr> <tr> <td style="border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 5px;"> International Searching Authority EUROPEAN PATENT OFFICE </div> </td> <td style="border: none; vertical-align: top;"> <div style="border: 1px solid black; padding: 5px;"> Signature of Authorized Officer M. VAN MOL </div> </td> </tr> </table>			<div style="border: 1px solid black; padding: 5px;"> Date of the Actual Completion of the International Search 13th July 1988 </div>	<div style="border: 1px solid black; padding: 5px;"> Date of Mailing of this International Search Report 02.08.88 </div>	<div style="border: 1px solid black; padding: 5px;"> International Searching Authority EUROPEAN PATENT OFFICE </div>	<div style="border: 1px solid black; padding: 5px;"> Signature of Authorized Officer M. VAN MOL </div>																													
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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.

JP 8800375

SA 21756

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 26/07/88. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 2561400		None	
US-A- 2775248		None	
FR-A- 398422		None	
EP-A- 0197206	15-10-86	None	
EP-A- 0197184	15-10-86	None	
US-A- 2336024		None	
FR-A- 2076190	15-10-71	None	